Aortic Stenosis: A Congenital Heart Problem

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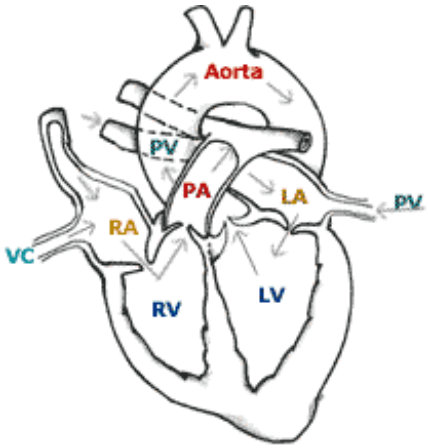
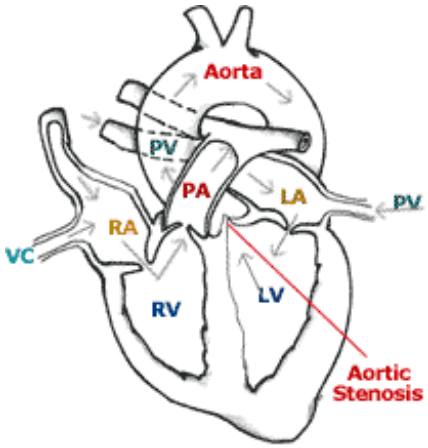
The heart is the organ (or system) which frequently fails in the dog and surprisingly, it happens to dogs of all ages. In the young, this is typically the result of congenital abnormalities in the formation of the heart or blood vessels, which surround it. In older animals, it is usually a case in which one side or chamber is weakened or over worked due to altered circulatory patterns.

The heart is actually nothing more than a mechanical pump. It accepts blood on one side and forces it through the lungs, then its other half pumps the liquid on through the entire body. The heart does not change or alter the blood in any way. It has no glandular tissue and therefore secretes nothing into the blood nor does it extract anything. It is probably the simplest and most easily understood organ in the entire body.

As a quick review, blood returns from the body and enters the right upper chamber of the heart, called the right atria. At this point, the blood is low in oxygen but high in carbon dioxide. It is then pumped from the atria through the right atrioventricular valve into the right ventricle. From this larger chamber, it is then forced on into the lung field through the pulmonary artery. This is the only artery in the body that carries non-oxygenated blood. Carbon dioxide is a byproduct of body metabolism and is attached to the red blood cells. In the lungs, carbon dioxide is replaced with oxygen. The reoxygenated blood then moves through the pulmonary vein back into the heart and enters the left atrium. This chamber pumps the blood through the mitral valve into the left ventricle, which is the largest, most heavily-muscled chamber of the heart. While other chambers only move the blood a short distance, the left ventricle has the responsibility of forcing blood throughout the entire body. This completes the system, which allows blood to circulate throughout the body and then return to the heart.





In young dogs, a congenital condition referred to as aortic stenosis affects the left side of the heart. When the left ventricle pumps blood to the body, it goes first through the aorta. This huge artery then branches into smaller ones that supply different areas. With aortic stenosis, the opening between the left ventricle and aorta is smaller than normal causing the left ventricle to work much harder to force the required amount of blood through the restricted area into the aorta and on to the rest of the body. Animals with this disorder are weak, lethargic, prone to fainting and may have poor growth rates. All of these signs are due to inadequate profusion of the tissues with nutrient and oxygen-rich blood. These animals typically have much shortened life spans and death finally results from left-sided heart failure. Even though the left ventricle is extra strong, it cannot maintain this workload over time. Only surgical opening of the stenotic area of the aorta provides a true cure.

LA	**Left atrium**
LV	**Left ventricle**
PA	**Pulmonary artery**
PV	**Pulmonary vein**
RA	**Right atrium**
RV	**Right ventricle**
VC	**Vena cava**

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